

BOTANY.—*New plants from Central America.*—IV.<sup>1</sup> PAUL C. STANDLEY, U. S. National Museum.<sup>2</sup>

In this paper there appear descriptions of several new species of Panama plants, and Dr. William Trelease has contributed an account of a new species of *Peperomia* collected in Guanacaste, Costa Rica, by Prof. Juvenal Valerio. The rather numerous new combinations listed below are mostly ones necessary for the proper listing of the flora of the Canal Zone.

*Cyperus hayesii* (C. B. Clarke) Standl.

*Torulanium hayesii* C. B. Clarke, Kew Bull. Add. Ser. **8**: 20. 1908.

*Cyperus panamensis* (C. B. Clarke) Britton.

*Mariscus panamensis* C. B. Clarke, Kew Bull. Add. Ser. **8**: 15. 1908.

*Stenophyllus hirtellus* (Schrad.) Standl.

*Isolepis hirtella* Schrad. in Schult. Mant. **2**: 70. 1824.

*Callisia multiflora* (Mart. & Gal.) Standl.

*Commelina multiflora* Mart. & Gal. Bull. Acad. Brux. **9**<sup>2</sup>: 374. 1842.

*Callisia martensiana* C. B. Clarke in DC. Mongr. Phan. **3**: 312. 1881.

*Vagnera paniculata* (Mart. & Gal.) Standl.

*Smilacina paniculata* Mart. & Gal. Bull. Acad. Brux. **9**<sup>2</sup>: 388. 1842.

*Vagnera salvini* (Baker) Standl.

*Tovaria salvini* Baker, Journ. Linn. Soc. Bot. **14**: 567. 1875.

*Vagnera flexuosa* (Bertol.) Standl.

*Smilacina flexuosa* Bertol. Nov. Com. Acad. Bonon. **4**: 411. *pl.* **39**. 1840.

*Vellozia panamensis* Standl., sp. nov.

Caudex simple or branched, densely covered by the persistent fibrous leaf bases; leaves linear, 8–25 cm. long, 5–9 mm. wide, subulate-attenuate, glabrous above, whitish-pilose beneath, the margins cartilaginous, smooth; scapes 1 or 2, stout, 4–6 cm. high, densely glandular, the glands short-stipitate above; perianth tube nearly 5 cm. long, densely covered with stipitate glands, the lobes linear, about 1 cm. long, glandular outside, stamens 12; style filiform, twisted above, exceeding the perianth; capsule 1.5 cm. long, globose-oval, very densely covered with dark glands, these borne on stout spinelike stipes.

Type in the U. S. National Herbarium, no. 715574, collected on Cerro Vaca, eastern Chiriquí, Panama, altitude 900–1135 meters, by H. Pittier (no. 5352).

This is the first plant of its family (Velloziaceae) to be reported from Central America.

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**Peperomia valerioi** Trelease, sp. nov.

A moderately small, stoloniferous, glabrous herb; stem short but rather thick (5-6 mm.); leaves alternate, elliptic- or obovate-spatulate, obtuse, more or less emarginate, cuneately attenuate, rather large (4.5-5 × 11 cm.), drying coriaceous and rather glossy, pinnately veined nearly throughout, the branches of the midrib about 6 × 2; petiole short (about 1 cm.), scarcely winged; spikes terminal, moderately stout and long (2 × 100 mm. or more), closely flowered; peduncle about 8 cm. long, bracted at about the middle; bracts small, round-peltate, about 12 to the pseudo-whorl; berries oblong, the short conical beak filiformly protracted; stigma anterior at base of the beak.

Type in the U. S. National Herbarium, no. 1,169,888, collected at Arenal, Costa Rica, at 600 meters, by Juvenal Valerio (no. 31).

**Struthanthus oerstedii** (Oliver) Standl.

*Loranthus oerstedii* Oliver, Naturh. For. Kjöbenhavn Vid. Medd. **1864**: 171. 1865.

This new name has been listed by the writer (in Standl. & Calderón, *Lista Pl. Salv.* **72**. 1925), but without indication of the name-bringing synonym.

**Alternanthera williamsii** Standl.

*Achyranthes williamsii* Standl. *Contr. U. S. Nat. Herb.* **18**, 89. 1916.

**Alternanthera williamsii** f. *purpurea* Standl., f. nov.

Like the typical form of the species, and differing only in the color of the leaves, which are purple or purple-red.

Type in the U. S. National Herbarium, no. 1,153,387, collected along the Corozal Road, near Panama City, Panama, Dec. 13, 1923, by Paul C. Standley (no. 26892).

Typical *A. williamsii* is a common weedy plant in thickets about the Canal Zone. This striking form, with handsomely colored leaves, is seen frequently in gardens, where it is planted for ornament. It occurs also in the wild state, but perhaps only as an escape from cultivation. The flowers are white, as in the normal form. When specimens are dried all the purple coloration disappears.

**Castalia blanda** (Meyer) Standl.

*Nymphaea blanda* Meyer, *Prim. Fl. Esseq.* **201**. 1818.

**Radicula mexicana** (Moe. & Sessé) Standl.

*Nasturtium mexicanum* Moe. & Sessé; *DC. Reg. Veg. Syst.* **2**: 193. 1821.

**Leptoglottis leptocarpa** (DC.) Standl.

*Schrankia leptocarpa* DC. *Prodr.* **2**: 443. 1825.

**Leptoglottis hamata** (Humb. & Bonpl.) Standl.

*Schrankia hamata* Humb. & Bonpl.; *Willd. Sp. Pl.* **4**: 1042. 1805.

*Leptoglottis* DC. seems to be the proper name for the genus known as *Schrankia* Willd. and more recently as *Morongia* Britton.

**Amerimnon escatophyllum** (L.) Standl.

*Hedysarum ecastophyllum* L. Syst. Nat. ed. 10. 1169. 1759.

**Machaerium microphyllum** (Meyer) Standl.

*Drepanocarpus microphyllus* Meyer, Nov. Act. Nat. Cur. **12**: 808. 1825.

*Machaerium glabripes* Pittier, Contr. U. S. Nat. Herb. **20**: 472. 1922.

**Protium sessiliflorum** (Rose) Standl.

*Icica sessiliflora* Rose, N. Amer. Fl. **25**: 259. 1911.

**Malache ovata** (Presl) Standl.

*Malachra ovata* Presl. Rel. Haenk. **2**: 125. 1836.

**Malache fruticosa** (Mill.) Standl.

*Sida fruticosa* Mill. Gard. Dict. ed. 8. *Sida* no. 18. 1768.

**Malache dasypetala** (Turcz.) Standl.

*Pavonia dasypetala* Turcz. Bull. Soc. Nat. Moscou **31**: 189. 1858.

**Taonabo seemanni** (Triana & Planch.) Standl.

*Ternstroemia seemanni* Ann. Sci. Nat. IV. **18**: 260. 1862.

**Parsonsia calophylla** (Cham. & Schlecht.) Standl.

*Cuphea calophylla* Cham. & Schlecht. Linnaea **2**: 361. 1827.

**Chelonanthus alatus** (Aubl.) Standl.

*Lisianthus alatus* Aubl. Pl. Guian. 214. *pl. 80*. 1775.

**Malouetia guatemalensis** (Muell. Arg.) Standl.

*Stemmadenia guatemalensis* Muell. Arg. Linnaea **30**: 410. 1860.

*Malouetia panamensis* Heurck & Muell.; Heurck, Obs. Bot. 185. 1870.

**Prestonia obovata** Standl., sp. nov.

Large woody vine with milky sap, the branches bearing numerous corky tubercles; leaves opposite, the petioles stout, 7–14 mm. long; leaf blades obovate or broadly obovate, 10–16 cm. long, 5–7.5 cm. wide, cuneate at base, obtuse or rounded at apex and cuspidate-apiculate, thick, glabrous, green above, pale beneath, with about 9 pairs of lateral nerves; inflorescences terminal, racemose, pedunculate, the pedicels stout, 1–1.5 cm. long, puberulent; calyx sparsely puberulent or glabrate, thick and fleshy, the 5 lobes twice as long as the tube, lance-oblong, acuminate, the calyx bearing within at base 5 deltoid truncate scales 2 mm. long; ring of the disk cuplike, 2.5 mm. long; corolla salverform, glabrous, fleshy, the lobes yellow, the throat purplish, the tube 15 mm. long, 4–5 mm. thick, the lobes contorted, broadly oblique-ovate, nearly 1 cm. long, cuspidulate; corolla throat furnished with an annulus 2 mm. high; anthers sagittate, 5 mm. long, connivent about the stigma, appendaged at base.

Type in the U. S. National Herbarium, no. 678837, collected along trail between Gamboa and Cruces, Canal Zone, Panama, July 2, 1911, by H. Pittier (no. 3767).

Not closely related to any species known previously from Central America. Sterile specimens from Gatuncillo, Canal Zone (*Piper* 5609, 5643) are probably referable to this species. The leaves of these specimens are as much as 25 cm. long and 15 cm. wide.

***Prestonia exserta* (A. DC.) Standl.**

*Haemadictyon exsertum* A. DC. in DC. Prodr. **8**: 426. 1844.

This species was described from Caracas, Venezuela. It occurs also in Panama.

***Cestrum panamense* Standl., sp. nov.**

Slender tree 4.5-9 meters high, the branchlets terete, green, glabrous or very sparsely puberulent; petioles slender, 7-15 mm. long, glabrous or nearly so; leaf blades mostly lance-oblong, sometimes ovate or ovate-oblong, 10-16 cm. long, 3.5-7 cm. wide, acuminate to long-attenuate at apex, rounded or broadly rounded at base, thin, bright green, glabrous, the lateral nerves about 15 on each side, arcuate-spreading; cymes axillary and terminal, lax, few or many-flowered, 2-6 cm. long, the branches very slender, slightly tomentulose or glabrate, the bracts linear or lanceolate, green, 10 mm. long or shorter, the flowers partly slender-pedicellate and partly sessile; calyx green, narrow-campanulate, 1.5-2 mm. long, glabrous or thinly and minutely tomentulose, the limb shallowly and irregularly 5-dentate, the teeth obtuse; corolla pale green, the tube slender, glabrous outside, 10-11 mm. long, gradually widening from base to apex, nearly 2 mm. wide at the mouth, the 5 lobes oblong-lanceolate, 3 mm. long, obtuse or acutish, pubescent outside along the incurved margins; filaments inserted 2.5 mm. below the apex of the corolla tube, the filaments glabrous, not appendaged; style equaling the corolla tube; fruit subglobose, glabrous, 6 mm. in diameter.

Type in the U. S. National Herbarium, no. 1,217,919, collected in moist forest along the Río Tapia, Province of Panama, Panama, near sea level, Dec. 24, 1923, by Paul C. Standley (no. 28042). The following collections also represent the species:

PANAMA: Hills west of Canal near Gatún, Canal Zone, *Standley* 27261. Río Tapia, *Standley* 30661. Along Río Dupí, eastern Chiriquí, *Pittier* 5238.

COSTA RICA: Forests of Boca de Zhorquín, Talamanca, alt. 50 m., *Tonduz* 8568. Forests of Tuis, alt. 600 m., *Tonduz* 11355.

HONDURAS: Cuyamel, *Carleton* 460.

***Bacopa limosa* (Pennell) Standl.**

*Macuillania limosa* Pennell, Proc. Acad. Phila. **1920**: 158. 1920.

***Bacopa violacea* (Pennell) Standl.**

*Monocardia violacea* Pennell, Proc. Acad. Phila. **1920**: 156. 1920.

***Bacopa humilis* (Pennell) Standl.**

*Monocardia humilis* Pennell, Proc. Acad. Phila. **1920**: 157. 1920.

***Bacopa axillaris* (Benth.) Standl.**

*Herpestis axillaris* Benth. in DC. Prodr. **10**: 396. 1846.

*Arrabidaea isthmica* Standl., sp. nov.

Large woody vine, the branchlets terete, brown, puberulent or glabrate; petioles 2.5–3 cm. long, the petiolules 1.5–2 cm. long; tendrils long, slender, simple, coiled; leaflets 2, lance-oblong, 12–15 cm. long, 5–5.5 cm. wide, rounded and emarginate at base, acuminate at apex, thin, nearly concolorous, minutely puberulent above along the costa, obscurely puberulent beneath along the nerves or nearly glabrous, the venation prominent-reticulate; panicles axillary, 30 cm. long, laxly many-flowered, ovoid, the branches densely puberulent; calyx campanulate, 5 mm. long, densely and minutely puberulent, the limb truncate, with 5 minute distant teeth; corolla pink, 5.5–6 cm. long, finely tomentose outside, the tube about 7 mm. long and 4 mm. thick, abruptly expanding into the throat, this 1.5–2 cm. wide at the mouth, the lobes broadly rounded; stamens subequal, the anthers 2 mm. long; ovary elongate-ovoid, minutely lepidote.

Type in the U. S. National Herbarium, no. 676736, collected near Paraíso, Canal Zone, Panama, Jan. 26, 1911, by H. Pittier (no. 2576).

*Anemopaegma punctulatum* Pitt. & Standl., sp. nov.

Large woody vine, the branchlets slender, terete at first, angulate in age, glabrous; leaves opposite, 2-foliolate, bearing in their axils sessile suborbicular green foliaceous appendages 5–8 mm. long; petioles 1–2.5 cm. long, the petiolules 4–8 mm. long; leaflets elliptic-oblong, 8.5–13.5 cm. long, 3–5 cm. wide, acute or obtuse at base, acute or acuminate at apex, with obtuse tip, thin-coriaceous, glabrous, concolorous, puncticulate, especially beneath; tendrils, when present, very long, slender, simple; flowers geminate or ternate in the axils, on pedicels 1–1.5 cm. long; calyx campanulate, 9–13 mm. long, 9 mm. wide, glabrous, punctate, the margin entire; corolla pale yellow, the tube 6–7 cm. long, slender below, gradually dilated about 2 cm. above the base into a throat 1.5–2 cm. broad, the lobes subequal, broadly rounded, 1.5 cm. long, densely and minutely lepidote within.

Type in the U. S. National Herbarium, no. 1,083,010, collected along the Río Sirri, Trinidad Basin, Province of Colón, Panama, near sea level, July, 1911, by H. Pittier (no. 4009). The following collections also belong here:

PANAMA: Near Gatún, Canal Zone, *Goldman* 1869. Caño Quebrado, Canal Zone, *Pittier* 6669.

COSTA RICA: Limón, *Pittier*, 16005.

Related species are *A. grandiflorum* Sprague, in which the leaflets are much broader and the flowers larger, and *A. chamberlaynii* (Sims) Bur. & Schum., which has much smaller flowers.

*Guarania suberosa* Standl., sp. nov.

Large woody vine, climbing over tall trees, the stems 1.5–3 cm. thick, covered with very thick, narrow, corky ridges, the wood divided into radial sections, with numerous large longitudinal channels; staminate racemes clustered on short spurs on naked stems near the ground; peduncles 1–3.5 cm. long, sparsely hirtellous or glabrate; rachis about 1 cm. long, the pedicels numerous and dense, 1–3 cm. long, minutely appressed-pubescent or glabrate; calyx tube 2–2.5 cm. long, orange-scarlet, minutely puberulent or glabrate, swollen at base, above about 3 mm. thick; sepals narrowly linear, 5–10 mm. long, orange-red, spreading; petals linear-attenuate, yellow, 3–4 mm. long, connivent to form a sharp-pointed cone; stamens 2, dorsifixed, 12–14 mm. long, linear, short-replicate at base, the connective linear, prolonged at apex as a linear-triangular papillose appendage.

Type in the U. S. National Herbarium, no. 1,219,834, collected in moist forest on Barro Colorado Island in Gatún Lake, Canal Zone, Panama, near sea level, Jan. 17, 1924, by Paul C. Standley (no. 31461). Also collected in forest along the Río Indio de Gatún, Canal Zone, Jan. 1911, by E. A. Goldman (no. 2778).

The leaves of this species have not been collected. Species of *Guarania* with woody stems are rare, and habitally (as well as structurally) this one seems to resemble *G. megistantha* Donn. Smith, described from the Atlantic lowlands of Costa Rica. In that species, however, the petals are longer than the sepals.

ZOOLOGY.—*New species and subspecies of American turtles.* LEONHARD STEJNEGER, U. S. National Museum.

It has been considered advisable to place on record the following brief characterizations of some undescribed forms of turtles in the collection of the U. S. National Museum.

***Kinosternon herrerae*, new species.**

*Diagnosis.*—Plastron smaller than opening of shell; plastron deeply incised posteriorly; carapace without keel; nasal shield furcate; width of bridge contained in the length of the anterior plastral lobe; postcentrals scarcely lower than tenth marginals; interpectoral seam one-fourth to one-third the interhumeral; gular relatively short, shorter than one-half the anterior lobe; interabdominal seam shorter than either lobe; first central lamina narrow, widely separated from second marginals; rostrum strongly hooked; male with postfemoral tuberculated patches.

*Type.*—U. S. National Museum No. 61249. Adult male.

*Type locality.*—Xochimilco, Valley of Mexico.

In addition to the type three adult females were presented to the National Museum by Dr. Alfonso L. Herrera, the distinguished director of Biological Studies, and the National Museum of Mexico, through Dr. A. Busek.

The new species, although larger and with a larger head, has the general appearance of *K. subrubrum*, but it differs in many important respects, as shown in the diagnosis. References in the literature to *K. pensilvanicum* in Mexico in most instances relate to the present species.

***Kinosternon abaxillare* Baur, new species.**

*Diagnosis.*—“Near *Kinosternon cruentatum*, but axillary lamina absent and posterior seam of abdominal laminae convex; three more or less distinct longitudinal keels near together; plastron not emarginate behind; gular large, about one-half the length of anterior lobe; interfemoral seam very short, at most one-sixth of interanal seam.”

*Type.*—U. S. National Museum No. 7518; adult male.

*Type locality.*—Tuxtla, Chiapas, Mexico.

In the national collection there are twelve shells collected by Dr. C. H. Berendt at Tuxtla. They were named *Kinosternon abaxillare* by the late Dr. Georg Baur, from whose manuscript note I have abstracted the above diagnosis. The locality Tuxtla, visited by Dr. Berendt, is Tuxtla Gutierrez, not far from the Chiapas River, which belongs to the Atlantic watershed and

drains into the Gulf of Mexico. It should not be confounded with Tuxtla in the state of Veracruz. The species seems to be a valid one, though the most obvious character, the absence of a distinct axillary, is not absolutely constant, inasmuch as in a young specimen it is plainly separated off from the abdominal lamina by a distinct seam.

***Kinosternon bauri palmarum*, new subspecies.**

*Diagnosis.*—Differs from typical *Kinosternon bauri* in the head being larger and the snout less conical and pointed; profile of beak more perpendicular; horizontal outline of carapace more perfectly elliptical; laminae of carapace thin, semitranslucent, pale; color of head including nasal shield, pale gray with a uniform reticulation of dusky lines and spots; temporal pale stripes more or less distinctly indicated.

*Type.*—U. S. National Museum No. 61065; adult female.

*Type locality.*—Royal Palm State Park, Dade County, Florida.

Three more specimens of this form, all collected at the same locality by C. A. Mosier, have been examined. They differ strikingly from the typical dark *K. bauri* by the thinness and translucency of the horny laminae of the upper surface, which results in the very pale color with the sutures of the bony shell underneath shining through as narrow whitish lines. As a consequence, the three longitudinal light bands on the carapace, so characteristic of the species, are rather indistinct. It should be noted that the coloration of the plastron is the normal one of the typical form.

***Terrapene nelsoni*, new species.**

*Diagnosis.*—Nostrils vertically oval, close together, not visible in side view of head; hind feet with four claws; three phalanges in middle digit of fore foot; carapace with a median keel anteriorly; digits scarcely webbed; no bony temporal arch; upper jaw hooked, not notched in the middle; first marginal lamina almost as long as width of first central lamina; length of first central equals width of third central; fourth central shorter than width, shorter than first.

*Type.*—U. S. National Museum No. 46252; adult.

*Type locality.*—Pedro Pablo, Tepic, Mexico; 2500 feet altitude.

The type is unique and is one of two specimens of box turtles, the only ones obtained by Dr. E. W. Nelson and E. A. Goldman during their many years of collecting in Mexico. It is dedicated to Dr. E. W. Nelson, Chief of the U. S. Biological Survey, in recognition of the splendid work done by him and his organization in making known the vertebrate fauna of that country.

***Graptemys pseudogeographica versa*, new subspecies.**

*Diagnosis.*—Color pattern of postocular region that of typical *Graptemys pseudogeographica*, fine light lines running obliquely upwards from tympanum to posterior edge of orbit, but postorbital spot extending backwards from its lower (outer) edge and not from its upper (inner) edge.

*Type.*—U. S. National Museum No. 27473.

*Type locality.*—Austin, Texas.

Seven paratypes from the same locality (U. S. N. M. Nos. 27474–80) are essentially like the type and differ markedly both from typical *pseudogeographica* and from *kohnii*.